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# SCIENCE

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## THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE THE RELATIONS BETWEEN JUPITER AND THE ASTEROIDS<sup>1</sup>

THE story of the smaller bodies which form part of the solar system belongs altogether to the nineteenth and twentieth centuries. The discovery of Ceres on the first of January, 1801, followed by those of Pallas, Juno and Vesta, in the next six years, gave promise of a new field for the astronomer. Nearly forty years, however, elapsed before any more were found. The improvements in star maps about the middle of the century enabled observers to detect new objects more easily, so that from 1845 to 1860 over sixty were captured. Since that time scarcely a month but brings one or more to the list, and now nearly 700 are known. But this by no means completes the tale. New asteroids are constantly being recorded and receive a temporary designation and are perhaps observed two or three times. In fact the number of new discoveries has become too great for the few astronomers interested to obtain orbits of sufficient accuracy for future observation. It has become a question whether the search should be continued, and if so what plan should be adopted for the computation of the orbits.

To the student of celestial mechanics these small bodies furnish many interesting problems. The older planets and our own moon have had such thorough attention accorded to the study of their motions, that the outstanding difficulties are almost solely in the last refinements and

<sup>1</sup> Address by the retiring vice-president of Section A, American Association for the Advancement of Science, Minneapolis, December 28, 1910.

association of liquids and its working in the case of salt solutions, together with the hydrolysis idea as set forth by Reychler, fully suffice to explain the chemical peculiarities of salt solutions. "... The two parts into which a salt dissolved in water ought necessarily to separate in order to produce a double decomposition, are not hypothetical electrical ions, but a *real* base and acid coming from the chemical action of water upon the salt in solution" (p. 133).

It would be of little use to undertake here to defend the dissociation theory. Besides, one would mostly have to repeat what was written on various occasions, during the storm and stress period of the theory, by Ostwald's powerful pen. Thus, referring to Reychler's hydrolysis idea, Ostwald pointed out in 1893: "Unfortunately, the author has omitted to state how his hypothesis works in the case of salts of insoluble acids or bases; how, for instance, 50 to 80 per cent. of zinc hydroxide can remain dissolved, without precipitating out, in a solution of zinc sulphate or zinc chloride."<sup>1</sup> It might also be asked, why a strong solution of common salt, if it contains a great deal of free hydrochloric acid, does not invert ordinary cane sugar, and so forth, and so forth. But we will not insist.

The best friends of the dissociation theory have come to feel that it is insufficient, that it needs modification, or rather, perhaps, some addition. But its quantitative triumphs have been remarkable. *It will not go unless some new theory is brought forward that will do all that the dissociation theory has done, and more, and that on a quantitative basis, in the way of correlating apparently disconnected phenomena.*

Chesneau's book contains no such new theory, and its blow at the dissociation idea will scarcely be felt. Nevertheless, its contents will be of interest to research students of the theory of solutions. It certainly is well written, well translated by Professors Lincoln and Carnahan, and beautifully published by the Macmillan Company.

M. A. ROSANOFF

<sup>1</sup> See *Zeit. physik. Chemie*, XII., p. 800, 1893.

#### SCIENTIFIC JOURNALS AND ARTICLES

THE recent numbers of the *Journal of Pharmacology and Experimental Therapeutics* contain the following articles:

Vol. I., No. 5.

"Anastomosis between the Portal Vein and the Inferior Vena Cava (Eck's Fistula,)" by B. M. Bernheim, John Homans and Carl Voegtlin.

"The Pharmacologic Action of Certain Protein Cleavage Products upon the Heart," by R. B. Gibson and W. H. Schultz.

"The Influence of Alcohol on the Composition of the Urine," by W. Salant and F. C. Hinkel.

"A Poisonous Principle in Certain Cotton-seed Meals," by Albert C. Crawford.

"Physiological Studies in Anaphylaxis: I., The Reaction of Smooth Muscle of the Guinea-pig Sensitized with Horse Serum," by W. H. Schulz.

Proceedings of the American Society of Pharmacology and Experimental Therapeutics.

Vol. I., No. 6.

"An Experimental Study of the Functional Activity of the Kidneys by Means of Phenolsulphonaphthalein," by L. G. Rowntree and J. T. Geraghty.

"A Practical Method for the Preparation of Phenolsulphonaphthalein," by Edgar A. Slagle.

Vol. II., No. 1.

"The Action of Drugs on the Salivary Secretion," by V. E. Henderson.

"Thyreotropic Iodine Compounds," by Reid Hunt and Atherton Seidell.

"On Insufflation of the Lungs with Hydrogen; with Carbon Dioxide, and with Air," by C. C. Guthrie, F. V. Guthrie and A. H. Ryan.

"The Influence of Intravenous Injections of Sparteine and Adrenalin on the Heart of the Dog," by A. Strickler and Moyer S. Fleisher.

"In regard to the Detoxification of Benzoic Acid by Optical Isomers of Leucin," by A. H. Koelker and Samuel Amberg.

"On the Toxicology of the Tutu Plant," by W. W. Ford.

Vol. II., No. 2.

"On the Action of Magnesium Sulphate," by S. A. Matthews and Clyde Brooks.

"On the Efficacy of Antimony-thioglycollic Acid Compounds in the Treatment of Experimental Trypanosomiasis," by John J. Abel and L. G. Rowntree.

"Further Observations on the Immunization of Animals to the Poisons of Fungi," by W. W. Ford.

"Expectorants," by V. E. Henderson and A. H. Taylor.

### SPECIAL ARTICLES

#### ELLIPTIC INTERFERENCE IN CONNECTION WITH REFLECTING GRATING

IN my earlier papers<sup>1</sup> and in a forthcoming theoretical account of the subject, I have shown the practical advantages obtained by associating the interferences of thin plates with the diffractions of the transparent grating—a subject originally suggested to me by the phenomenon of coronas, in which a marked interference phenomenon was also superposed on the diffractions. These elliptic fringes may, however, be evoked in other ways than those discussed, and it is to some of these that I venture to refer here.

Let the oblique mirror in Michelson's apparatus, for instance, be the usual plate of glass and replace the two opaque mirrors *M* and *N* by identical small reflecting gratings, set at the angle of diffraction of the spectrum, symmetrically to the incident rays. Here the elliptic interferences will be seen in the telescope at right angles to the rays issuing from the collimator. This adjustment is virtually the same as the plan of returning the diffracted spectra normally to the oblique transparent grating, discussed in the preceding paper in this JOURNAL. The fringes are rings.

Again, in a simple spectrometer adjustment for grating spectra, suppose the grating (either transmitting or reflecting) to be separated into two halves by a division parallel to the ruling. Then on displacing one of the halves, micrometrically, parallel to itself from its original coplanar position, elliptic interference must show itself in a way which is perhaps more direct than any of the methods hitherto treated. The fringes are straight.

CARL BARUS

BROWN UNIVERSITY, R. I.

#### THE AMERICAN SOCIETY OF NATURALISTS

THE twenty-eighth annual meeting of the American Society of Naturalists was held in the auditorium of the New York State College of Agriculture at Cornell University on December

<sup>1</sup> SCIENCE, XXXII., 1910, p. 92; *Am. Journal of Science*, XXX., 1910, p. 161.

29 and 30. The eastern branch of the American Society of Zoologists so arranged its program that members were enabled to attend the Naturalists' meeting. Many of the members of the Association of Anatomists and American Society of Bacteriologists which were meeting in Ithaca also attended the program. Although the Botanical Society of America met elsewhere a number of botanists came instead to the meetings of the Naturalists. It may fairly be said, judging from the number present at both sessions, that the Naturalists' symposium was the chief feature of general interest at the entire Ithaca meetings.

The one cause of general regret was the unavoidable absence of the president, Dr. D. T. MacDougal, who was ill in the Johns Hopkins Hospital. President MacDougal had so carefully planned the program and had done so much to instill enthusiasm into the entire arrangements that all felt the pronounced success of the occasion to be the result of his efforts.

Dr. MacDougal's well-thought-out and richly suggestive address on "Organic Response" was read at the annual dinner of the society by the vice-president, Professor H. S. Jennings.

At the meeting of the executive committee and at the business session of the society there was a general expression of the feeling that the present affiliation of the biological societies was highly desirable. The Anatomists, Bacteriologists, Zoologists and Naturalists which met at Ithaca might meet comfortably at many of the universities of the country which are situated, as Cornell is, in a small town. It was also felt that there was a far more favorable opportunity for personal discussions and exchange of ideas at a smaller meeting than at a more general one.

The Anatomists, Zoologists and Naturalists had a joint smoker at the Ithaca Hotel on Wednesday evening.

The Naturalists' dinner was given on the following evening at the Ithaca Hotel and was well attended. After the dinner the president's address was read.

The scientific program was given on Thursday afternoon and on Friday both fore- and afternoon.

The central topic of the discussions was the pure line conception in the study of inheritance and evolution. Most of the papers in the first part of the program seemed to support the views of Professor Johannsen, while several of the later papers on the program seemed to strongly suggest that selection and a modified Lamarckian view were yet to account for important factors in the